

Serial No. 10/708,926
Amdt Dated October 15, 2008
Non-Final Office Action mailed June 16, 2008

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REMARKS/ARGUMENTS

Claims 10-22, 35-37 and 39-41 are currently pending in the present application. Claims 1-9 and 23-34 were withdrawn from consideration, by way of a Response to a Restriction Requirement, mailed December 5, 2005.

Claim Objections

Claim 17 is objected to due to informalities. The Office Action indicates that it is not clear how the circumferential gap is incorporated in the shield. Applicants respectfully disagree and point to FIG. 7A and paragraph 53 of the Specification as at least two places in Applicants' original disclosure that describes how a circumferential gap is incorporated in a shield of the invention:

FIG. 7A shows a shield 58 of the invention with an insulating gap 75. This gap 75 is composed of an insulating material (e.g. fiberglass, ceramic, RANDOLITE™). It may be placed anywhere along the shield, but it is generally easier to construct the insulating gap 75 at one of the shield ends. One skilled in the art can choose a technique from the many known in practice to form a gap. The insulating material can be a separate piece bonded in place or fabricated onto the shield (e.g. molded elastomer or a composite insulating material) as an integral part. In some embodiments, the insulating material may be disposed and captured by a step in the shield (not shown).

Specification, ¶53.

Withdrawal of the Examiner's objection to claim 17 is respectfully requested,

Claims 10-15, 17-22, 35, 36, 39, 40 and 41 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,408,561 ("Redwine") in view of Applicants' Admitted Prior Art ("AAPA"). Claims 16 and 37 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Redwine '561 in view of AAPA as applied to claims 10 and 35 and in further view of U.S. Patent No. 6,100,696 ("Sinclair"). Applicants traverse each of the above rejections, for reasons set forth below.

With respect to claim 10, Redwine fails to disclose "a lateral resistivity sensor disposed in a recess" as required by claim 1. The structure in Redwine that is presented as a "recess" (in

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which receiving toroid 40 is disposed) does not appear to be a "recess in a tubular" at all, or at least a recess as defined by the claimed invention. In Redwine, the outer wall of the central mandrel 22 (which is one part of the sub 20) is merely pared or stepped down from the larger outside diameter of the lower shoulder 31. This creates a "reduced diameter portion" about which cylindrical components may be supported without extending radially past the larger outside diameter of the mandrel. (See discussion of "reduced diameter portion of the mandrel 22" in col. 3, lns. 33-75). This reduced diameter portion of the mandrel, which is being construed as a "recess", extends from the upper shoulder 30 as shown in FIG. 3-B, which end of the mandrel 22 is threadedly connected with an upper section 25 of the sub 20, all the way down to the lower shoulder 31 as shown in FIG. 3-A. The end or upper shoulder 30 is actually at the same reduced diameter as the rest of the "recess," while the lower shoulder 31 is stepped up to the larger outside diameter. Over this reduced diameter portion of the mandrel 22, multiple cylindrical components are supported, including the insulating material in which the receiving toroid 40 is embedded, the steel band 43, and various spacing and insulating cylinders (items 42 and 45 in FIG. 3-A and items 45, 52, 54, and 55 in FIG. 3-B). Each of these components has an outside diameter that substantially matches the outside diameter at the lower shoulder 31 of the mandrel 22.

Noting the relatively great length of this suggested "recess" as shown in FIGS. 3-A and 3-B, it is clear that it is not the "indentation" or "small hollow" generally recognized as a recess. Perhaps, that is why it is called a "reduced diameter portion" rather than a "recess". This "reduced diameter portion" takes up most of the outer portion of the mandrel 22 in FIGS. 3-A and 3-B and supports almost all of the major components on the outside of the central mandrel 22. Applicant notes also that this suggested "recess" of the central mandrel 22 is actually "open" at the upper shoulder 30. The upper shoulder 30 is at the same reduced diameter. The suggested "recess" is not bordered by a perimeter edge or rim on both sides from which the recess recedes.

It would seem that the "recess" defined by (in between) the lower shoulder 31 and the steel band 41 would be closer in structure and function to a recess according to the invention. It is in the space between these two components where the receiving toroid 40 is located. This space or recess is not a "recess in the elongated tubular" as required by claim 1 however, as it is not in or defined by the elongated tubular.

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Redwine appears to follow the formerly standard practice of using sleeves and cylinders mounted about the tool or mandrel to space and secure the components that have to be mounted on the tubular, while maintaining the strength of the tool. No recess is formed in the tubular. The tool only exhibits a reduced diameter portion that is then made up and covered by these sleeves and cylinders. Applicant notes again that the concept of forming a recess to contain functional components into the tubular was not conventional practice at the time of the invention, for fear that such "cut outs" would compromise the structural integrity of the tool, present construction difficulties, and prove difficult for maintenance or replacement of the contained components. See *e.g.*, Applicants' Specification, ¶45.

Redwine also does not disclose a shield "disposed on and about the tubular to cover the recess..." Referring to FIG. 3A of Redwine, the receiving toroid 40 is indeed disposed beneath the outer wall of the mandrel 22, and a steel band 43 is disposed inside the same reduced diameter section. The steel band 43 includes a longitudinal overhang that enshrouds the receiving toroid 40. The steel band 43 does not, however, cover the rest of the recess as required by claim 10. Furthermore, even if the reduced diameter section were construed as a recess in Redwine, the steel band 43 is disposed in that recess and thus, is not disposed on the tubular, as also required by claim 10.

To further distinguish the difference between the recess and shield of the claimed invention and the "recess" and steel band of Redwine, claim 1 is amended to recite additional structural limitations. First, the recess is defined as "a recess in an outer wall of the tubular and extending circumferentially about the longitudinal axis of the tubular, wherein the recess recedes from a first edge at the outer wall of the tubular and a second edge at the outer wall of the tubular, the first edge being spaced longitudinally across the recess from the second edge, ..." For support, see *e.g.*, FIGS. 4-6, 8-9, and 11, and accompanying descriptions, including ¶¶45-46 and 62. Claim 1 is also amended to further recite the shield as being "disposed on and about the outer wall of the tubular and extending across the recess to cover the recess and the lateral resistivity sensor." See *e.g.*, FIGS. 4-6 and 11 and ¶¶49, 52-53, and 63.

The suggested "recess" of Redwine clearly does not recede from a first edge and a second edge of the outer wall of the mandrel. Perhaps, the edge of the lower shoulder 31 may

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be construed as a first edge, but there is no second edge to match it. Moreover, the steel band 43 is not disposed on and about the outer wall of the tubular, but instead sits beneath the outer wall and within the "recess."

Accordingly, the combination of Redwine and AAPA fails to teach or suggest (i) a lateral resistivity sensor disposed in a recess and (ii) a shield to cover the recess and the lateral resistivity sensor, as required by claim 10.

In the alternative, Redwine does not disclose a circumferential gap extending continuously about the tubular as provided by the claimed invention. There is no circumferential gap in or on the steel band 43 nor on the mandrel 22. To further highlight this distinguishing feature, the circumferential gap is further recited as being located separately from the recess and extending continuously about the tubular. It is, therefore, clear that the "recess" or "recess material" in Redwine does not constitute a "circumferential gap" as required by claim 10.

For reasons as discussed above, the combination of Redwine and AAPA fails to teach or suggest one or more elements of claim 10. This combination of references does not, therefore, provide a proper basis for a non-obviousness rejection. Accordingly, claim 10 and dependent claims 11-22 are in condition for allowance.

Dependent claim 17 recites further that the circumferential gap is incorporated in the shield. This claim is directed to one embodiment of the invention, and defines further structural limitations of the "circumferential gap." Support may be found in FIG. 8 and accompanying descriptions. Clearly, the steel band 43 in Redwine (which has been construed to be a "shield") does not have a gap incorporated therein. Redwine's steel band 43 is depicted as being uniformly composed of a steel material. Claim 17 contains, therefore, additional patentable subject matter.

Dependent claim 19 has been further amended to recite that the circumferential gap is incorporated in the tubular away from the recess. This claim is directed to another embodiment of the invention, and defines further structural limitations of the "circumferential gap." As discussed above, Redwine does not appear to promote any "cut-outs" or recesses in the tubular. Redwine also does not disclose any other "recess" proximate the suggested "recess" (that contains the receiving toroid 40) and that would provide the function of preventing electrical current flow in the shield. Claim 19 contains, therefore, additional patentable subject matter.